

NASA Glenn's Engine Components Research Lab, Cell 2B, Reactivated to Support the U.S. Army Research Laboratory T700 Engine Test

The U.S. Army Vehicle Technology Directorate at the NASA Glenn Research Center has been directed by their parent command, the U.S. Army Research Laboratory (ARL), to demonstrate active stall technology in a turboshaft engine as the next step in transitioning this technology to the Army and aerospace industry. Therefore, the Vehicle Technology Directorate requested the reactivation of Glenn's Engine Components Research Lab, Cell 2B, (ECRL 2B). They wanted to test a T700 engine that had been used previously for turboshaft engine research as a partnership between the Army and NASA on small turbine engine research. ECRL 2B had been placed in standby mode in 1997. Glenn's Testing Division initiated reactivation in May 2002 to support the new research effort, and they completed reactivation and improvements in September 2003.

As part of the reactivation, the facility underwent many upgrades to meet program goals and improve accuracy to make it a reliable, economical, and state-of-the-art facility. The dynamometer and the output shaft system were redesigned with new shafting and a torquemeter. The waterbrake was refurbished and will be used to apply load to the T700 engine. The control room was significantly enhanced with new operator stations and programmable logic controls. The electronic scanning pressure system was replaced with a higher accuracy processor, and all control panel loaders and pushbuttons were replaced with touch screens. The ECRL 2B rig can test turboshaft engines with shaft power outputs up to 2500 hp. T700, T800, and T55 engines have been tested to investigate performance, inlet temperature and pressure distortion, shaft vibrations, and automated stall recovery.

These enhancements will enable the more efficient use of the facility and improve data accuracy. We plan to start using the facility to support T700 research engine testing in fiscal year 2004.



T700 engine mounted in ECRL 2B.

Find out more about this research at <http://facilities.grc.nasa.gov/>

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